Notice No.9

Rules and Regulations for the Classification of Ships, July 2022

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: June 2023

Amendments to	Adoption Date	Applicable Date
Part 5, Chapter 2, Section 9	1 July 2023	1 July 2023
Part 5, Chapter 12, Section 5	1 July 2023	1 July 2023
Part 5, Chapter 24, Sections 3, 8, 10 & 11	1 July 2023	1 July 2023
Part 5, Chapter 26, Sections 2, 3 & 7	1 July 2023	1 July 2023
Part 7, Chapter 3, Sections 1 & 2	1 July 2023	1 July 2023

Part 5, Chapter 2
Reciprocating Internal Combustion Engines

■ *Section 9*
Starting arrangements

9.2 Air receiver capacity

9.2.1 Where the main engine is arranged for air starting, the total air receiver capacity is to be sufficient to provide, without replenishment, not less than 12 consecutive starts of the main engine, alternating between ahead and astern, if of the reversible type and not less than 6 consecutive starts if of the non-reversible type. At least two air receivers of approximately equal capacity and which may be used independently are to be provided. For scantlings and fittings of air receivers, *see Pt 5, Ch 12 Piping Design Requirements*.

9.2.2 For multi-engine installations, the number of starts required for each engine are to be as follows:

(a) Two engines through common reduction gearing: 6 consecutive starts per engine for fixed pitch propeller/propellers; 3 starts per engine for controllable pitch propeller/-propellers.
(b) Three engines or more through common reduction gearing: 3 consecutive starts per engine.
(c) Twin engine installations, where each engine is directly coupled to a separate shaftline: 6 consecutive starts per engine.
(d) For all other types of multi-engine installations, 3 consecutive starts per engine are required.

9.2.4 Each air receiver is to be fitted with a drain arrangement at its lowest part, permitting oil and water to be blown out.

Part 5, Chapter 12
Piping Design Requirements

■ *Section 5*
Plastic pipes

5.5 Additional fire performance criteria applicable to ships

(Part only shown)

Table 12.5.1 Fire endurance requirements

	Location										
	A	B	C	D	E	F	G	H	I	J	K
NEW SERVICES											
33 Exhaust gas cleaning system effluent line	~~L31~~ L3^{1}	L3^{1}	N/A	N/A	N/A	N/A	N/A	N/A	~~N/A~~ 0	~~L31^{,11}/N/A~~ L3^{1,11}/N/A	~~N/A~~ 0
34 Urea transfer/supply system (SCR installations)	L1^{12}	L1^{12}	N/A	N/A	N/A	N/A	N/A	N/A	0	~~L31^{,11}/N/A~~ L3^{1,11}/N/A	N/A

Note 8*.* ~~Scuppers serving open decks in positions 1 and 2, as defined in *Regulation 13 - Position of hatchways, doorways and ventilators* of the *Load Lines, 1966/1988 - International Convention on Load Lines, 1966, as Amended by the Protocol of 1988*, should be 'X' throughout unless fitted at the upper end with a means of closing capable of being operated from a position above the freeboard deck in order to prevent downflooding.~~ Scuppers serving open decks in positions 1 and 2, as defined in Regulation 13 of Protocol of 1988 relating to the *International Convention on Load Lines, 1966*, should be 'X' throughout unless fitted at the upper end with a means of closing capable of being operated from a position above the freeboard deck in order to prevent downflooding.

Note 10*.* ~~For tankers where compliance with *MARPOL - International Convention for the Prevention of Pollution from Ships Annex I of MARPOL 73/78Regulations for the Prevention of Pollution by Oil*, Regulation 19.3.6 is required, 'N/A' is to replace~~ For tankers where compliance with paragraph 3.6 of Regulation 19 of MARPOL Annex I is required, "NA" is to replace "0".

Note 13. For Passenger Ships subject to SOLAS II-2/21.4, *Regulation 21 -Casualty threshold, safe return to port and safe areas*.4 (Safe return to Port), plastic pipes for services required to remain operative in the part of the ship not affected by the casualty thresholds, such as systems intended to support safe areas, are to be considered essential services. In accordance with *MSC.1/Circular.1369 – Interim Explanatory Notes for the Assessment of Passenger Ship Systems' Capabilities After a Fire or Flooding Casualty– (22 June 2010)1*, interpretation 12, for Safe Return to Port purposes, plastic piping can be considered to remain operational after a fire casualty if the plastic pipes and fittings have been tested to L1 standard.

■ *Section 3* Information to be submitted

3.5 Pressure vessels

3.5.1 Plans of any pressure vessels, including details of the support of the vessels. Diagrammatic plans for systems associated with emissions abatement process equipment as required by ~~*Pt 5, Ch 10 Steam Raising Plant and Associated Pressure Vessels* and *Pt 5, Ch 11 Other Pressure Vessels*,~~ *Pt 5, Ch 24, 8.1 Pressure Vessels* as applicable. The manufacturer will submit FAT procedure to LR for review and acceptance.

■ *Section 8* Pressure vessels

8.1 General

8.1.1 Pressure vessels are to be in accordance with the requirements of the relevant Sections of *Pt 5, Ch 10 Steam Raising Plant and Associated Pressure Vessels* or *Pt 5, Ch 11 Other Pressure Vessels* as applicable, or with agreed Codes and specifications normally used for similar plants in land installations, suitably modified and/or adapted for the marine environment. SCR reactors are to be designed in accordance with the Rules of pressure vessels or using appropriate engineering analytical methods and constructed in accordance with the requirements for Class 3 pressure vessels under survey.

■ *Section 10* Storage and use of chemicals

10.1 General

10.1.10 *Chemical storage tanks are to be of steel or other equivalent material with a melting point above 925°C and are to be made with a material compatible with chemical treatment fluids or coated with appropriate anti-corrosion coating.* The requirement for the tank structure to be of steel or other equivalent material with a melting point above 925°C is not applicable for integral tanks on FRP vessels of less than 500 GT, provided that the integral tanks are externally insulated or coated with a self-extinguishing material.

■ *Section 11* SOx emissions abatement plant

11.1 General

11.1.2 In addition to the information and plans required in *Pt 5, Ch 24, 3 Information to be submitted*, the following are to be submitted for consideration:

- Details of the maximum and minimum ambient and sea water temperatures within which the emissions abatement plant is designed to operate, and maximum and minimum ambient air temperature and humidity where relevant, i.e. where operation is temperature or humidity dependent.
- Details of the corrosivity of wash water for wet scrubbing systems, e.g. specific gravity, temperature, pH, and presence of polluting substances such as oil content and turbidity.
- The Pitting Resistance Equivalent Number (PREN) is to be confirmed when stainless steels or nickel-based alloys are used for the wet scrubbing system containing wash water.
- ~~For scrubber towers, a Manufacturer’s Certificate for materials and welding details including procedure.~~
- Details on storage and use of sodium bicarbonate powder used in dry scrubbers, *see Pt 5, Ch 24, 10.2 Sodium bicarbonate*.

11.1.3 In addition to the requirements given in *Pt 5, Ch 24, 5 Hull construction* for the ship integration, the scrubber tower materials are to satisfy *Pt 5, Ch 24, 4.1 General 4.1.1* and welding is to be in accordance with *Ch 12 Welding Qualifications* and *Ch 13 Requirements for Welded Construction* of the *Rules for the Manufacture, Testing and Certification of Materials*, and the manufacturer is to supply a certificate confirming that the materials and welding of the scrubber tower satisfy these requirements.

Part 5, Chapter 26
Fuel Cell Power Installations

■ *Section 2*
Risk based studies

2.1 Risk assessment

2.1.1 A risk assessment specific to fuel cell power installations is to be carried out for each installation on board. The risk assessment is to evaluate risks related to the safe operation of the ship and as such is to address the safety of the fuel cell power installation itself and, where the fuel cell installation provides power for propulsion of the ship or other essential services, the dependability of the fuel cell power installation. The risk assessment shall demonstrate that the fuel cell installation's design conforms to the applied safety concept and supports LR's appraisal of the levels of safety proposed for the fuel cell's operation. A test programme shall be drawn up to confirm the conclusions of the assessment if safeguards that are additional to or different from those required by prescriptive Rules are identified.

2.2 Alternative design

2.2.3 The equivalence of the alternative design shall be demonstrated as specified in SOLAS Chapter II-1, Regulation 55 and approved by the Administration. However, the Administration should not allow operational methods or procedures to be applied as an alternative to a particular fitting, material, appliance, apparatus or item of equipment or type thereof which is prescribed by these Rules. If tests and/or survey requirements that are additional to or different from those in prescriptive Rules and Regulations are identified in the risk assessments, they shall be included in the engineering analysis which is to be carried on board the ship.

■ *Section 3*
Documentation for review

3.1 Ship profile, principle of operation and risk analysis

(Part only shown)

3.1.2 The documentation described below is to be submitted for appraisal:

a. ~~Engineering~~ The engineering reports and outputs from the risk and dependability assessments, and alternative design justification if applicable, required by *Pt 5, Ch 26, 2 Risk based studies*, as well as the control and monitoring FMEA required by *Pt 5, Ch 26, 5.5 Monitoring, control, alarm and safety system equipment and components*. The aforesaid documents provide the engineering and safety justification documentation demonstrating that the safety and dependability of the fuel cell power installation is commensurate with conventional oil-fuelled reciprocating and rotating machinery.

■ *Section 7*
Testing and trials

7.1 Testing

7.1.1 ~~The fuel cell modules are to be factory tested in accordance with a recognised National or International Standard acceptable to LR.~~ The fuel cell power systems are to be surveyed and tested at the manufacturer's works to demonstrate conformance to the applied construction standards in accordance with *Pt 5, Ch 26, 4.1 Fuel cell power installation 4.1.2*, and applicable class rules..

7.1.2 ~~The fuel cell power system is to be factory tested in accordance with an approved test schedule~~. Equipment forming the electric power conditioning system is to be tested at the manufacturer's works if required by *Pt 6, Ch 2 Electrical Engineering*.

7.2 Trials

7.2.2 ~~Trials are to include the testing all alarms and safeguards associated with the fuel cell power installation for all modes of operation as defined in the service profile.~~

Trials are to include the testing and survey of the following as a minimum:
(a) All piping in the fuel path assembled on board; a leak test using a suitable medium to a pressure dependent on the leak detection method applied.
(b) All alarms and safeguards for the fuel cell power system and ancillary systems, including emergency shutdown (ESD), as applicable.
(c) Automatic fuel cell power system shutdown and fuel supply isolation.
(d) The 'fail safe' response of the fuel cell safety system and ESD system upon fault conditions, as applicable.
(e) Mechanical ventilation of spaces containing fuel cells and reforming equipment, associated airlocks, and any ventilated external boundary enclosing the fuel path that is provided in lieu of equipment protection in the space concerned, as applicable.
(f) Purging of fuel cells and reformers using an inert gas or mixture of inert gas and flammable gas, as applicable.

(g) Gas detection and other leakage detection equipment in spaces containing fuel cells and reforming equipment, including internal leakage detection in any ventilated or inerted external boundary enclosing the fuel path that is provided in lieu of equipment protection in the space concerned, as applicable.
(h) Inerting of any external boundary that encloses the fuel path if provided in lieu of equipment protection in the space concerned.
(i) Fixed fire detection and fire-extinguishing systems associated with the fuel cell power installation(s).
(j) Where applicable, supplementary or alternative/equivalent safeguards as may be identified in the risk assessments or alternative design documentation.

7.2.3 The following shall be tested where inerting of the fuel cell space is accepted for atmospheric control:
(a) Inerting agent release;
(b) Inerting media monitoring;
(c) Controlled fuel shut-off upon pressure change in the space;
(d) Access prevention after release of the inerting agent;
(e) Evacuation of the inerting agent.

7.2.4 The following shall be tested where power for propulsion of the ship or other essential services is provided by fuel cell power installations:
(a) All modes of operation as defined in the service profile;
(b) Performance under full load;
(c) Electric power quality under load variations.

7.2.5 The following shall be tested where power for propulsion of the ship or other essential services is provided entirely by fuel cell power installations:
(a) One fuel cell power installation is retained in operation or is capable of being brought into operation in the event of a failure of the other;
(b) The fuel cell power installations can recover from black out;
(c) The fuel cell power installations can be brought into operation from the dead ship condition without external aid.

Part 7, Chapter 3
Fire-fighting Ships

■ *Section 1*
General

1.2 Classification and class notations

1.2.1 The class notations which may be assigned are:

- `**Fire-fighting ship 0,5** (total monitor discharge capacity in brackets)',
- `**Fire-fighting ship 1** (total monitor discharge capacity in brackets)',
- `**Fire-fighting ship 2** (total monitor discharge capacity in brackets)',
- `**Fire-fighting ship 3** (total monitor discharge capacity in brackets)',
- `**Fire-fighting ship 0,5** (total monitor discharge capacity in brackets) **with water spray**',
- `**Fire-fighting ship 1** (total monitor discharge capacity in brackets) **with water spray**',
- `**Fire-fighting ship 2** (total monitor discharge capacity in brackets) **with water spray**',
- `**Fire-fighting ship 3** (total monitor discharge capacity in brackets) **with water spray**'.

1.2.2 The notation **Fire-fighting ship 0,5,** **Fire-fighting ship 1**, **Fire-fighting ship 2** or **Fire-fighting ship 3** signifies that a ship complies with these Rules and is provided with the appropriate fire-fighting equipment described in *Table 3.1.1 Fire-fighting equipment*, with the total discharge capacity of monitors in m^3/h shown in brackets.

Table 3.1.1 Fire-fighting equipment

Equipment	Fire-fighting ship			
	0,5	1	2	3
Minimum total pump capacity, m^3/h	1200	2400	7200	10 000
Minimum number of water monitors	2	2	3	4
Minimum discharge rate per monitor, m^3/h	600	1200	1800	1800
Minimum height of trajectory of jets of monitors above sea level, metres	45	45	70	70

Minimum range of monitor jets, m	120	120	150	150
Minimum fuel capacity for monitors, hours	24	24	96	96
Number of hose connections each side of ship	4	4	8	8
Number of fireman’s outfits	4	4	8	8

■ *Section 2*
Construction

2.1 Hull

2.1.2 For ships with the class notations **Fire-fighting ship 0,5** and **Fire-fighting ship 1**, proposals to use uninsulated aluminium will be specially considered. Details of the measures taken to prevent the surface temperature of the aluminium being raised to an elevated level are to be submitted for approval. Such arrangements shall include water spray.

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